THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

133/1

BIOLOGY 1
(For Both School and Private Candidates)

Time: 3 Hours **Thursday, 05th May 2016 a.m.**

Instructions

1. This paper consists of **eleven (11)** questions in section A and B.
2. Answer **all** questions in section A and **three (3)** questions from section B.
3. The marks allocation is indicated at the beginning of each section.
4. Cellular phones are **not** allowed in the examination room.
5. Write your **Examination Number** on every page of your answer booklet(s).

SECTION A (55 Marks)

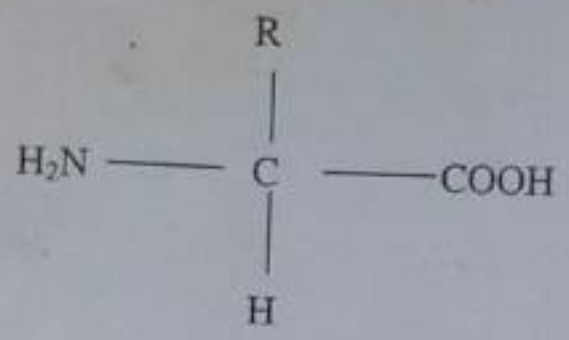
Answer **all** questions in this section.

Each question carries **8 marks** except question **six (6)** which carries **7 marks**.

1. (a) Draw a structure of chloroplast and label any six parts.

   (b) State three structural adaptations shown by the chloroplast to its role.

2. Study the molecular formula below and answer questions that follow.



   (a) (i) What is the general name given to the molecular formula above?

   (ii) What is the simplest form of R?

   (b) State six properties of enzymes.

3. (a) Discuss the effect of temperature on the rate of enzymic controlled reaction.

   (b) Draw the structure of ATP molecule and explain how it is formed.

4. (a) (i) Define the term taxonomic hierarchy.

   (ii) Using man as an example, illustrate the concept of taxonomic hierarchy.

   (b) Explain four advantages of using artificial system of classification.

5. (a) State three similarities between respiration and photosynthesis.

   (b) What will happen to the rate of respiration if:

   (i) temperature is raised above optimal point.

   (ii) health of an organism is impaired.

6. (a) Figure 1 shows two solutions which are separated by a partial permeable membrane. Study it carefully and answer questions that follow.

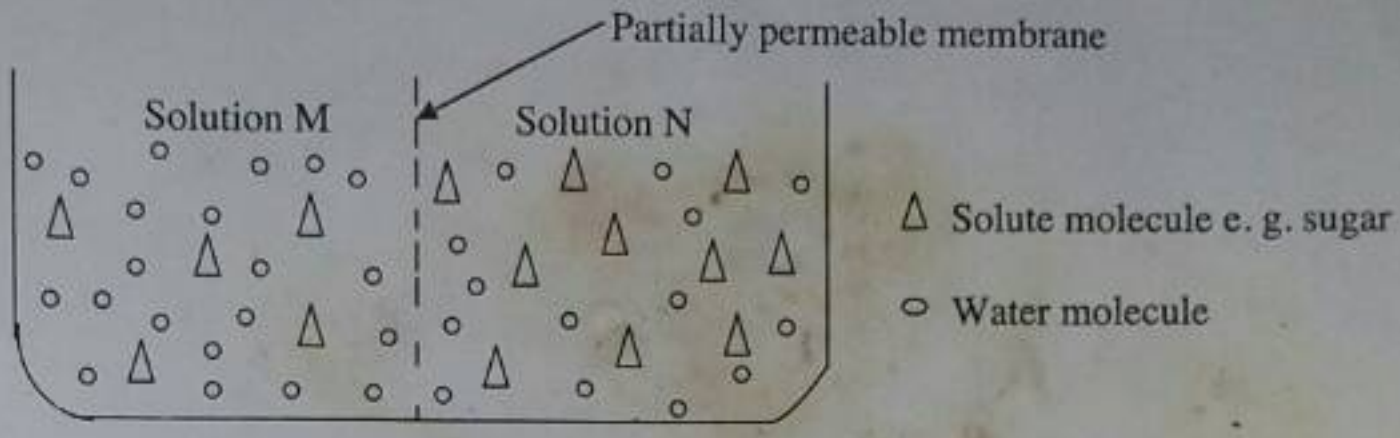


Figure 1

(i) Which solution has higher water potential?

(ii) Which solution has higher solute potential?

(iii) In which direction will osmosis occur?

(b) State four roles of osmosis in living organisms.

7. (a) Give five differences between mitosis and meiosis.

(b) State two significance of meiosis process in sexual reproducing organisms.

SECTION B (45 Marks)

Answer **three (3)** questions from this section. Each question carries fifteen (15) marks.

8. (a) With the help of a diagram, describe the movement of water and mineral salt across the root through the following ways:
   (i) Symplast
   (ii) Vacuolar
   (iii) Apoplast.

(b) Explain five roles of water in plants.

9. (a) Study Figure 2 and answer the questions which follow.

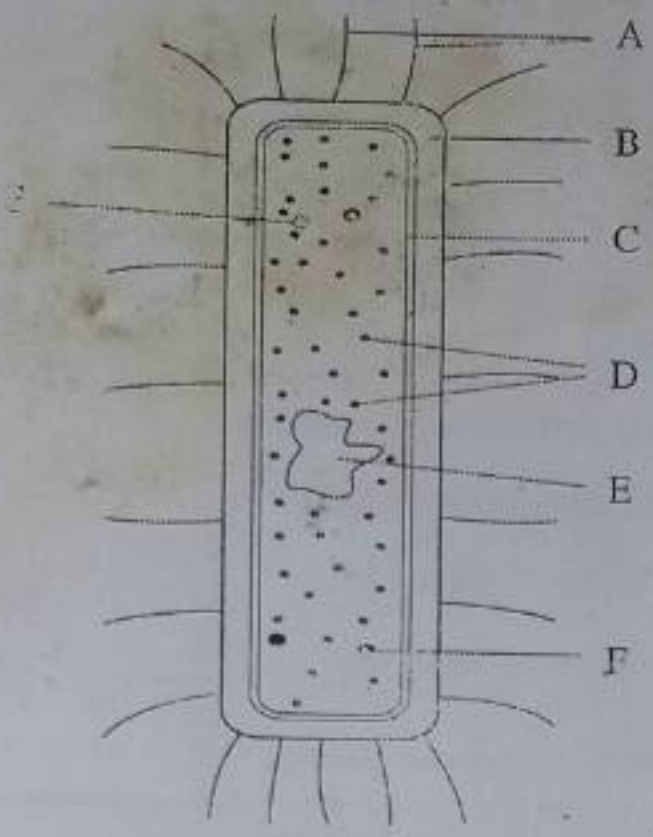


Figure 2

(i) Identify the cell.

(ii) Name the parts labeled A, B, C, D, E, F and G.

(b) Outline five differences between the cell in 9(a) above and a trypanosome cell?

10. With the help of a diagram, describe how the structure of cardiac muscles is adapted to its function.

11. (a) Name the chemical composition of proteins.

(b) Explain six categories of protein based on their functions.